

~~20-00~~
117335

REPORT BY THE U.S.

General Accounting Office

Information On California Delta Water Quality Standards

The Bureau of Reclamation's decision to voluntarily meet 1978 California water quality standards will require annually about 800,000 acre feet of water. Who will pay for this use of water is still unclear. State and Federal water officials must resolve their differences and reach new operating agreements.



GED-82-30
JANUARY 18, 1982

290290

Request for copies of GAO reports should be sent to:

**U.S. General Accounting Office
Document Handling and Information
Services Facility
P.O. Box 6015
Gaithersburg, Md. 20760**

Telephone (202) 275-6241

The first five copies of individual reports are free of charge. Additional copies of bound audit reports are \$3.25 each. Additional copies of unbound report (i.e., letter reports) and most other publications are \$1.00 each. There will be a 25% discount on all orders for 100 or more copies mailed to a single address. Sales orders must be prepaid on a cash, check, or money order basis. Check should be made out to the "Superintendent of Documents".



UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

COMMUNITY AND ECONOMIC
DEVELOPMENT DIVISION

B-205884

18 JAN 1982

The Honorable Tony Coelho
House of Representatives

The Honorable Charles Pashayan, Jr.
House of Representatives

On October 29, 1981, we briefed your offices on the use of water from the Bureau of Reclamation's Central Valley Project (CVP) to assure California Delta water quality. In accordance with your April 13, 1981, request and subsequent agreements, we agreed to provide information on the following questions:

1. How much CVP water (project yield 1/) will be used as a result of the January 31, 1979, decision by then Secretary of the Interior Cecil D. Andrus to voluntarily meet California water quality standards, if the decision is permanently implemented?
2. Who will be the potential beneficiaries from using CVP yield to assure Delta water quality?
3. Who will pay for this depletion of CVP yield?
4. How much will this depletion cost CVP users in potential lost revenues for project repayment?

This report summarizes the information provided to your offices on October 29, 1981. According to Bureau and State water officials:

--Implementing the Andrus decision will use about 800,000 acre feet of CVP water annually.

--Water users--both in the Delta and south of the Delta--will be potential beneficiaries as a result of the decision.

1/Project yield is the calculated amount of dependable water supply that can be assured each year over a long period of time regardless of shortages of available water in dry years. The existing CVP yield calculation of 8.1 million acre feet is based on the worst critically dry period, experienced in 1928-34.

(085632)

--Yield depletion will be paid for by either current CVP users or the taxpayers, depending on whether the water quality standards are imposed for enhancement or mitigation purposes. 1/

--Lost revenues could range from zero to \$2 million annually.

OBJECTIVES, SCOPE, AND METHODOLOGY

The objective of this review was to provide information about potential benefits accruing to Delta water users from the operation of the CVP to meet recently revised California water quality standards. As discussed, definite answers are not yet available to questions three and four, primarily because State and Federal water authorities have not reached agreement on whether the Andrus decision will be implemented by law and on whether the new water quality standards have been imposed to mitigate or enhance conditions in the Delta.

As requested, we did not validate the revenue or yield depletion figures provided by State and Bureau water officials. We did no original analysis of the statistical data due to time constraints, and as requested, we present opinions as provided by the officials we interviewed. To obtain the requested information, we interviewed officials from the Bureau of Reclamation, California Department of Water Resources, State Water Resources Control Board, Contra Costa County Water District, and various other non-Government officials familiar with Delta issues. We also reviewed various Federal and State documents related to Delta water quality, including (1) environmental impact reports and statements, (2) water quality control plans, and (3) various general publications relating to Delta water quality.

BACKGROUND

In the heart of California, 57 manmade agricultural islands encompassing about 738,000 acres are traversed by meandering rivers and sloughs that ultimately flow into San Francisco Bay to the Pacific Ocean. This area, known as the Delta, is where the Sacramento and San Joaquin Rivers meet to discharge more than

1/ Enhancement refers to actions by the Federal Government that generally improve water quality conditions in an area as a result of Federal water resource development. Mitigation refers to actions taken by the Federal Government to alleviate water quality damages resulting from Federal water resource development.

40 percent of the State's natural runoff. The Delta is rich in agricultural production (almost \$300 million annually), sport and commercial fishing, wildlife habitat, and recreation.

The Delta also serves as the conduit to transport water from State and Federal water storage facilities in northern California to water users south of the Delta. When water is released from the northern facilities, it travels down through the Delta to the confluence of the Sacramento/San Joaquin Rivers, where it begins to feel the drag of the enormous electrical pumps at pumping plants in the southern end of the Delta. Rather than continuing their flow to the sea, the flows in the Delta rivers are reversed toward the pump intakes. From the pumping plants at Tracy, California, water is pumped into canals for distribution to water users in southern California.

To mitigate, or relieve, what it believes are adverse impacts on the Delta as a result of Federal and State water operations, California recently adopted new, more stringent, water quality standards for the Delta. On August 16, 1978, the California State Water Resources Control Board adopted two documents which established the new water quality standards--the Water Quality Control Plan for the Sacramento/San Joaquin Delta and the Water Rights Decision 1485 (D-1485). The Delta water quality control plan established State salinity 1/ and flow standards 2/ to protect historical water users in the Delta. D-1485 encompasses appropriate aspects of the new standards as part of the terms and conditions in the State water rights permits for the Bureau of Reclamation and the State of California. These water rights permits establish the Bureau's and State's right to impound and use water and as such are critical to project operations.

1/Salinity standards represent the maximum amount of dissolved salts allowable in the water. Dissolved salts can adversely affect agriculture, fish and wildlife, and municipal and industrial water users.

2/Flow standards represent the minimum amount of water that must flow past a given point during certain periods. This standard is generally given in cubic feet per second of water flow.

Although the Bureau is not bound by law to provide water quality as a CVP project purpose, on January 5, 1979, the then Secretary of the Interior Cecil D. Andrus announced that the Bureau would voluntarily meet the water quality standards established by D-1485. The Andrus policy extended to all years, except those of extraordinary drought. In such years, the Secretary reserved the right to reevaluate his decision if meeting the standards would have an adverse impact on meeting existing Federal water contracts. Although the Bureau agreed to meet the State's water quality standards voluntarily, it reserved the right of the United States to challenge the jurisdiction of the State to impose water quality standards on the CVP. Because of adequate water flows, the Bureau has not been required to specifically release water from storage to meet the water quality standards.

The Bureau and State still disagree on some of D-1485's technical details. In general, these disagreements concern whether the standards enhance Delta water quality or mitigate the impacts on water quality resulting from operation of the State and Federal projects. According to Bureau officials, State and Federal water authorities will have to make additional studies to settle the enhancement versus mitigation issue.

HOW MUCH CVP WATER WILL BE USED AS
A RESULT OF THE ANDRUS DECISION?

The Andrus decision, if implemented, will deplete annual CVP yield by about 800,000 acre feet, or about 10 percent of the total CVP yield. On the other hand, a new agreement currently being negotiated between Federal and State water project officials, which includes meeting the new standards, could increase CVP yield by about 1.1 million acre feet.

According to the director of State water project operations and the assistant director to the Bureau's mid-Pacific regional office, the Andrus decision, if implemented, will deplete the CVP yield by about 800,000 acre feet over and above the water required to meet the CVP's current water quality standards at the Tracy pumping plant. This 800,000 acre feet of water, when needed, will be used to repel saltwater intrusion and provide sufficient water to meet D-1485's flow requirements. About 720,000 acre feet of the depletion would be needed to meet salinity and water flow standards for agricultural and fish and wildlife purposes throughout

the Delta. The remaining 80,000 acre feet of depletion would be needed to meet salinity and water flow standards for municipal and industrial purposes.

Conversely, a proposed Federal/State Coordinated Operating Agreement could more than offset the yield depletion that would result from meeting the D-1485 standards. Under the proposed agreement, the CVP project yield would increase 1.1 million acre feet, after complying with the D-1485 water quality standards. This increase results primarily from technical and other adjustments in the agreement. The new agreement will define how much water Federal and State projects must supply from their sources for use in the Sacramento Valley, including the Delta, and how much each can export. The two projects currently coordinate their operations under a 1971 draft agreement that has been adopted annually. The 1971 agreement was based on assumptions about future project development that are no longer valid, hence the need for negotiating a new agreement.

According to Bureau officials, however, the Bureau cannot sign the new agreement unless the Congress reauthorizes the CVP to include meeting the State Delta water quality standards as one of its authorized purposes. Bureau officials said that the current CVP project authorization precludes them from entering into any agreements that require using project yield for water quality.

WHO WILL THE POTENTIAL BENEFICIARIES BE
IF WATER QUALITY STANDARDS
ARE MET WITH CVP YIELD?

According to Bureau and State water officials, the primary beneficiaries of the Andrus decision will be Delta municipal and industrial water users, agriculture, and fish and wildlife. They will benefit because improved water quality contributes to increased crop yield, more productive manufacturing processes, better drinking water, and improved fish and wildlife environment. Benefits will also accrue to users of Federal and State water south of the Delta in the form of better water containing fewer chlorides and dissolved solids.

The two primary municipal and industrial water users in the Delta who will benefit from the decision are the Contra Costa County Water District and the city of Antioch. The Contra Costa

Water District is the sole source of municipal water for the Oakley Water District, the city of Pittsburg, and the Bay Water Company (West Pittsburg service area), as well as a supplier to other area municipalities. It is also an alternate supplier for Antioch when the quality of its source of water, the San Joaquin River, is inadequate. Water is also supplied by the district to several industries, including two major oil refineries. Some of these industries, including Fiberboard, Dow Chemical, and Crown Zellerbach, also divert water for processing and cooling purposes offshore at Antioch and Pittsburg.

Not all Delta water users agree with the Bureau's and State's contention that the new standards will benefit all Delta water users. Officials of the Contra Costa County Water District, a CVP contractor, told us that the D-1485 standards provide water during parts of July, August, and September that is not acceptable for municipal and industrial uses. They said that the sodium content in the water during this period often approaches 250 parts per million (the maximum allowed under D-1485), resulting in medically unsafe drinking water for some individuals and causing some industries to spend additional money on water treatment. These officials also believe that municipal and industrial water should contain less than 100 parts per million of chlorides and that the Environmental Protection Agency objective of 20 parts per million of sodium for drinking water is necessary for health purposes.

The agricultural beneficiaries occupy approximately 510,000 acres in the Delta. According to the State water board, agricultural water quality is critical in the Delta--the most important factor being salinity. Water with high salt content adversely affects the process by which plants take water from the soil, which in turn affects both the quantity and quality of plant yield.

The major fish and wildlife beneficiaries are two key fish species--salmon and striped bass. The State considered these species in developing the D-1485 water quality standards for several reasons, including their overall economic and recreational importance in the Delta and their sensitivity to water project operations. These species are affected by salinity and river flow conditions.

Water users south of the Delta will benefit from the Andrus decision because meeting the D-1485 standards throughout the Delta will provide users south of the Delta with water that contains fewer chlorides and dissolved solids.

WHO WILL PAY FOR THE YIELD DEPLETION?

Who will pay for yield depletion is unclear. According to Bureau officials, who pays will depend on whether the water required to meet the D-1485 standards mitigates project impacts or enhances historical water quality. They told us that if the standards mitigate project impacts (alleviate Federally caused water quality damages), all current CVP contractors will eventually pay the cost for the depletion in higher water rates. If, however, the standards enhance Delta water quality (improve it over what it was historically), the costs associated with providing the water will be at least partially nonreimbursable and be borne by the taxpayers. The costs would be nonreimbursable because the Bureau considers water quality enhancement to be a benefit accruing to the public at large.

The State water board contends that the D-1485 standards primarily mitigate the impact of State and Federal water project operations on Delta water quality. In other words, the standards represent the water quality that would generally exist in the Delta if the projects had not been built. According to a board official, the only exception to the mitigation position is the standard at the Contra Costa Canal intake, which does slightly enhance municipal and industrial water quality.

The Bureau disagrees with the State water board's contention. While it recognizes that CVP operations do at times adversely affect water quality in parts of the Delta, the Bureau contends that normal project operations have enhanced overall Delta water quality. Accordingly, the Bureau also contends that D-1485 standards will provide further enhancement. In other words, the Bureau's position is that while some water is necessary to mitigate project impacts, most of the water required to meet the standards enhances Delta water quality and thus the costs associated with this water should be nonreimbursable.

The Bureau's and State's conflicting positions result from technical questions arising from the model and procedures used to determine historical water quality and the quality levels

necessary to meet certain standards. According to both State and Bureau officials, these differences are being ironed out and will be considered during the triennial review of the Delta water quality control plan in 1984.

HOW MUCH WILL THE YIELD DEPLETION
COST IN TERMS OF LOST REVENUE FOR
PROJECT REPAYMENT?

If the Bureau were not required to meet the D-1485 standards, it could generate about \$8 million of water revenues. However, if required to meet the standards, the Bureau's estimate of revenues lost (if any) ranged from zero to \$2 million annually depending on how the issue of mitigation or enhancement is settled. The Bureau qualified its estimate of revenues lost since it had not fully analyzed potential changes in project power usage or considered reallocations of existing costs in determining the estimates.

Bureau officials believe they could easily sell CVP water to agricultural users if they did not have to use it to meet the D-1485 standards. They identified four major agricultural users (see table below) who would supposedly contract for the water if it became available.

<u>Potential water customers</u>	<u>Quantity (acre feet)</u>	<u>Water service rate</u>	<u>Total potential revenues</u>
Westlands Water District	250,000	\$13.30	\$3,325,000
Folsom South Service Area	250,000	7.70	1,925,000
Tehama-Colusa Service Area	200,000	9.45	1,890,000
Delta-Mendota Service Area	<u>100,000</u>	9.30	<u>930,000</u>
Total	<u>800,000</u>		<u>\$8,070,000</u>

According to Bureau officials, if the 800,000 acre feet of water needed for Delta water quality is considered a mitigation measure, CVP revenues for project repayment would not be reduced because CVP water service rates to existing customers would be increased. This increase would be necessary because the fixed capital and operation and maintenance costs for CVP storage,

conveyance, and pumping facilities would be spread over 800,000 acre feet less water. Also, there would be a reduction in power used for pumping project water and a corresponding increase in power available for sale to customers. While power customers would be paying a greater share of project cost, they would receive a greater share of project power. Therefore, some project costs formally charged to water customers would now be absorbed by power customers--hence no lost revenue.

Bureau officials told us that if the water needed to meet D-1485 enhances Delta water quality, the CVP would lose about \$2 million in revenue annually. These revenues would be lost because an appropriate share of capital and operation and maintenance costs associated with CVP water storage facilities would be reallocated as nonreimbursable costs. The \$2 million would be borne by the taxpayers because the Bureau considers water quality enhancement to be a benefit accruing to the public at large.

Also, enhancement of Delta water quality would require the Bureau to increase the portion of the water service rate associated with moving water to existing CVP contractors. Because delivery costs are fixed and have to be repaid by those who receive the water, reducing the amount of water delivered would result in a higher per-acre-foot cost for users. Thus, revenue of about \$5 million would be generated through increased water service rates to existing CVP water contractors.

The remaining \$1 million in revenue would be generated through increased sales to power customers. Regardless of whether the Andrus decision mitigates or enhances water quality, its implementation would reduce project power usage. This would occur because no pumping would be required to convey the water to the Delta, whereas considerable pumping would be required to get it to the potential agricultural water users. By not selling the water to agricultural users, the Bureau could increase the amount of power it sells and/or reduce the amount of power it buys to meet its current commitments. Bureau officials estimated that such actions would result in generating about \$1 million in revenue.

- - - -

At your request, we did not obtain written Department of the Interior comments on the information presented in this report. However, the report was discussed with Bureau officials and their comments were included where appropriate.

B-205884

As arranged with your offices, we are sending copies of this report to the Secretary of the Interior. Copies of this report will also be available to other interested parties upon request.



Henry Eschwege
Director

AN EQUAL OPPORTUNITY EMPLOYER

**UNITED STATES
GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548**

**OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300**

**POSTAGE AND FEES PAID
U. S. GENERAL ACCOUNTING OFFICE**



THIRD CLASS